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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/692,823	10/27/2003	Tatsuya Fukunaga	117599	9665
25944	7590	09/19/2005	EXAMINER	
OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320			LEE, BENNY T	
			ART UNIT	PAPER NUMBER
			2817	
DATE MAILED: 09/19/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/692,823

Applicant(s)

FUKUNAGA, TATSUYA

Examiner

Benny Lee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 July 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 2 and 4-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2 and 4-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 July 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date. _____ | 6) <input type="checkbox"/> Other: _____ |

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The substitute specification filed 11 July 2005 has been reviewed, found acceptable and has replaced the original specification. The following objections pertain to the substitute specification:

The disclosure is objected to because of the following informalities: In paragraph [0047], first line therein, note that “and3show” should be separated for a proper description. For the specification’s description of each drawing figure, note that all reference labels therein should be correspondingly described relative to that figure’s specification description. For the description of multiple figures (e.g. figs. 1-3, 15, 16A, 16B, 16C, 17, etc) the reference labels therein should be reference to those drawing figures in which they actually appear (unless they appear in each one of the multiple figures). Appropriate correction is required.

Claims 1, 2, 4-6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, note that the recitation “having the connecting window around the connecting window” is vague in meaning. Clarification is needed.

In claim 4, last paragraph, note that “in each H plane” is vague in meaning since no plural “h” planes have been strictly defined

In claims 4, 5, note that it is unclear how a “magnetic field” recited herein relates to “magnetic fields” as recited in claim 1. For example, if the “magnetic field” of claim 4 is intended to be the same “magnetic field” as recited in claim 1, then perhaps in claims 4, 5, --the magnetic field-- should be recited instead of “a magnetic field”. Clarification is needed.

The following claims have been found objectionable for reasons set forth below:

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In claim 4, line 2, note that “second waveguide as a propagation region of the electromagnetic waves” should be rephrased as --region for electromagnetic wave propagation in the second waveguide-- for a proper characterization.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sanford et al in view of Uchimura et al (both of record).

Sanford et al (Fig. 3) discloses a mode converting structure usable as an RF module comprising: a first coplanar waveguide (16) operating in a TEM mode; a second waveguide (28) operating in another (i.e. non-TEM) mode. Note that the second waveguide is preferably disclosed as having a hollow waveguide region with metal walls, but may take alternative forms such as a waveguide region with a dielectric interior (see col. 2, ls 53-54). Note that a slot or opening (34), functioning as a “window”, is provided in one of the vertically stacked (i.e., upper/lower) metal walls of the waveguide through which the coplanar waveguide is passes through and is in direct contact therewith to provide electromagnetic coupling between the coplanar waveguide (16) and the waveguide (28), and thus is disposed “around” the window. Furthermore, note that by virtue of the coupling through the vertically oriented metal walls, (which corresponds to the claimed coupling configuration) the magnetic field in the coplanar waveguide inherently matches with the magnetic field in waveguide (28), as would have been

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recognized by those of ordinary skill in the art. However, the waveguide (28) of Sanford et al does not disclose the stacking layers being grounding electrodes as claimed.

Uchimura et al provides an exemplary teaching of a waveguide configuration comprised of a propagation region having stacked dielectric and conductive layers including opposing stacked upper and lower grounding layers. As described at col. 1, ls 23-25 and ls. 32-37, hollow metal waveguides are large in size at the operating frequencies in Uchimura et al as compared to dielectric body waveguide structures which provide the benefit of reduced size at the same operating frequency.

Accordingly, it would have been obvious to have modified the waveguide (28) in Sanford et al to have been a multi-layered stacked dielectric waveguide of the type exemplarily taught by Uchimura et al. Such a modification would have been obviously suggested by the teaching in Sanford et al that alternative types of waveguides (e.g. dielectric region instead of hollow region) would have been usable in conjunction with the teaching in Uchimura et al that dielectric waveguides provide the benefit of reduced size as compared to hollow waveguides at the same operating frequency, thereby suggesting the obviousness of such a modification.

Regarding claims 2, 6, note that the selecting of propagating modes (e.g. TE, etc) would have been considered an obvious optimization of general operating conditions in the waveguide. As known to those of ordinary skill in the art the dimensioning of the waveguide dictates the type of mode(s) which would propagate within the waveguide.

Claims 1, 4, 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sanford et al in view of Takenoshita et al (both of record).

Sanford et al discloses the claimed invention except for the second waveguide being a stacked waveguide with grounding layers and plural branched propagating regions.

Takenoshita et al discloses a stacked dielectric waveguide configuration with opposing upper lower grounding layers. Moreover, the waveguide provides for plural branched propagating regions. Moreover, Takenoshita et al also recognizes that a reduced size waveguide structure (as compared to a hollow waveguide) can be obtained using a dielectric waveguide structure.

Accordingly, it would have been obvious to have modified the hollow waveguide structure (28) of Sanford et al to have been a dielectric waveguide structure taught by Takenoshita et al. Such a modification would have been obvious for the same reasons as set forth in the preceding rejection. Note that as an obvious consequence of such a modification, the resultant dielectric structure would have included plural branched propagating regions.

Applicant's arguments filed 11 July 2005 have been fully considered but they are not persuasive.

Applicants' have argued that Sanford et al, by virtue of the coplanar waveguide being inserted into the slot, does not "directly conductively connect to an electrode of the waveguide 28". Additionally, it has been argued that the "transmission line 16" (in Sanford) "is not connected to the waveguide 28 around the slot 34" With respect to Uchimura et al, applicants' have argued that the microstrip 92 (in Uchimura) "does not extend in a stacking direction of the layers of transmission line 5" and that microstrip 92 is "an open end that does not end at the conductive layer 2" around a window in one of the stacked conductive layers. Similarly, with respect to Takenoshita et al, it has been argued that a "first waveguide" does not "extend in the

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stacking direction” with an “end” of the first waveguide being “directly connected around a connecting window”.

In response, the examiner notes that applicants’ appears to be arguing the references separately rather than their use in the obviousness combination rejections applied above. In any event, the examiner must respectfully disagree with applicants’ assertions. First, with respect to the Sanford et al reference, it should be noted that by inserting the coplanar (i.e. the “first”) waveguide into the slot, such an arrangement does indeed constitute disposing such a waveguide “around” the “window” (i.e. slot), as far as such a limitation can be understood. Moreover, it should be noted that from Fig. 3 of Sanford et al that the transition conductors (46, 48) which define “ends” of side conductors (20, 22) of the coplanar waveguide do indeed directly electrically connect with the bottom wall of waveguide (30) at the edges of the slot (34) to thus inherently place side conductors (20, 22) at the same electrical potential as the bottom wall of the waveguide (i.e. at ground potential), thereby meeting that aspect of the claimed invention. As for the Uchimura et al & Takenoshita et al references, it should be noted that these references were relied on for their relevant teaching that dielectric waveguide having stacked conductive and dielectric layers with the stacked conductive layers electrically connected together provide effective electromagnetic waveguides of smaller size than hollow waveguides. Thus this would have suggested the obviousness of using such waveguides as an alternative to the Sanford et al waveguide as described in the above rejections. It should also be noted that the examiner is not per se relying on Uchimura et al or Takenoshita et al for any of the coupling arrangement and direct coupling features claims, especially since these features have been taught or suggested in Sanford et al, and as such would have carried through to the obvious combination


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with either Uchimura et al or Takenoshita. Accordingly, the examiner believes that the above rejections stand for reasons of record.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication should be directed to Benny Lee at telephone number (571) 272-1764.



BENNY T. LEE
PRIMARY EXAMINER
ART UNIT 2817

B. Lee